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IN RE APPLICATION OF: :

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SERIAL NO.: 10/067,944 :

FILED: FEBRUARY 8, 2002 : GROUP ART UNIT: 1711

FOR: RESIN COMPOSITIONS AND MOLDED PRODUCTS MAKING USE OF THE SAME

DECLARATION UNDER 37 C.F. R. §1.132

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

Now comes ISAMU YAMAGUCHI and states:

1. That I am a graduate of Graduate School of Science and Technology, Nihon University at Tokyo, Japan, and received my master degree in the year 1974.

2. That I have been employed by Dainichiseika Color & Chemicals Mfg. Co., Ltd. for 31 years as a researcher in the field of the industrial chemistry.

3. That I understand the English language or, at least, that the contents of the Declaration were made clear to me prior to executing the same.

4. That the following experiments were carried out by me or under my direct supervision and control.

5. The following experiments demonstrate the comparison of the capability of some threne dyes according to the present invention, which capability is a function cable of

compensating insufficient heat discoloration resistance of cellulosic fibers themselves in products (test pieces) molded using a resin composition comprising a matrix resin and short cellulosic fibers dyed with a threne dye, with the capability of other some threne dyes except for the threne dyes according to the present invention. The experiments described herein all were performed by using the methods disclosed in this present application.

6. The preparation of the test pieces

The test pieces were prepared using short viscose rayon fibers dyed with threne dyes according to the present invention or the other threne dyes for the comparative examples (please see Table 1) in a dye concentration of 12% according to the method disclosed in Example 1 of the specification of the present application:

(1) Dyed short viscose rayon fiber samples

Undyed short viscose rayon fibers of 3.3 decitex and 0.5 mm in average length were prepared. A portion of the short fibers was dyed to equilibrium in a known manner for direct dyeing (an IN method having hydrosulfite of 3 g/L and a dyeing temperature of 55 ℃) by using the threne dyes according to the present invention or the other threne dyes for the comparative examples in an amount that the dye amounted to 12%, based on the corresponding portions of the short fibers (hereinafter called "dye concentration"). The dyed short viscose rayon fiber samples were obtained accordingly.

(2) Resin compositions (Claim 1)

The obtained dyed short fiber sample (12.0 parts) was mixed in a tumbler with polypropylene (28.3 parts), linear low-density polyethylene (28.3 parts), an ethylene-propylene elastomer ("TAFMER A=4085", trade name; product of Mitsui Petrochemical Industries, Ltd.; 20.0 parts), a maleic-anhydride-modified product of polypropylene ("POLYBOND 3150", trade name; product of Shiraishi Calcium Kaisha, Ltd.; 3.0 parts), a white pigment (6.3 parts) as an added color, a dispersant of the metal stearate

soap type (1.7 parts), an antistatic agent of the stearic monoglyceride type (0.3 part), and an antioxidant of the hydroxyphenyl propionate type (0.1 part); the added white pigment used above was a toned pigment prepared by adding red iron oxide, a calcined yellow pigment and carbon black to titanium oxide.

(3) Master batches (MB) (Claim 5)

The thus-obtained molding resin composition was extruded into strands by an extruder., the strands were pelletized using a pelletizer; the MBs were obtained.

(4) Molding resin compositions (Claim 9)

The obtained MB (5 parts) was blended with an uncolored resin (100 parts; being composed of 65% of polypropylene, 16% of an ethylene-propylene elastomer , and talc).

(5) Molded products (test pieces) (Claim 11)

The resultant resin blend was subjected to injection molding by using an injection molding machine with conditions of 200℃ or 240 ℃ for an intra-cylinder residence time of 30 minutes and continuous molding; the test pieces were obtained.

7. The method for assaying the threne dyes' capability of compensating insufficient heat discoloration resistance of cellulose fibers them selves. In this assay, 5 test pieces were used in each example; obtained values were presented as a mean for 5 test pieces.

In each of the examples according to the present invention and the comparative examples, the MB (5 parts), which contained the dyed short fibers, was blended with a propylene-based composite material as an uncolored resin (100 parts; the composite material composed of 65% of polypropylene, 16% of an ethylene-propylene elastomer, and talc). Firstly, standard test pieces were prepared with an injection molding machine by setting a molding temperature and an intra-cylinder residence time at 200℃ and 0 minute (continuous molding) in each of the tested threne dyes (see Table 1), respectively. Test pieces were prepared at molding temperatures of 240℃ and 30 minutes in each of the tested

threne dyes, respectively. Color differences ΔE between the standard test pieces and the corresponding test pieces prepared in conditions of 240 ℃ for 30 minutes in the tested threne dyes, respectively, were measured by a colorimeter ("SM Color Computer, Model SM-5", trade name; manufactured by SUGA TEST INSTRUMENTS CO., LTD. Each test piece with a ΔE value of 1 or smaller was rated "A" (passed), each test piece with a ΔE value greater than 1.5 was rated "C" (failed), and each test piece with a ΔE value greater than 1 but not greater than 1.5 was rated "B".

8. The results

(1) The surfaces of the above-obtained test pieces in the present invention's examples and the comparative examples, said surfaces having been provided with a citron-like, embossed pattern, contained dyed short fibers of a specific color distributed in a fine rugged surface of a white color and had external appearances with similar warmth and depth as nonwoven fabric.

(2) The above ranking results are shown in Table 1.

Tested threne dyes	Experiments	Threne dye's capability
C.I. Vat Red 10	the present invention	A
C.I. Vat Blue 14	the present invention	A
C.I. Vat Brown 1	the present invention	A
C.I. Vat Yellow 2	the comparative	C
C.I. Vat Orange 5	the comparative	C
C.I. Vat Blue 18	the comparative	C

9. Conclusion

As shown in Table 1, the test pieces containing short cellulosic fibers dyed with threne dyes according to the present invention are acknowledged to be much more excellent in the capability of compensating the insufficient heat discoloration resistance than those containing short fibers dyed with the other threne dyes except for the present invention's dyes; that is, the threne dyes according to the present invention are acknowledged to be

much more excellent in the capability (function) of compensating the insufficient heat discoloration resistance of cellulosic fibers themselves in the products (test pieces) molded using the resin compositions comprising a matrix resin and dyed short cellulosic fibers than the other threne dyes except for the ones according to the present invention.

10. The undersigned petitioner declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

11. Further deponent saith not.

Isamu Yamaguchi

Signature ISAMU YAMAGUCHI

September 27, 2005

Date September 27, 2005